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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PAUL, DISLER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,720	Applicant(s) SCHAEFFER ET AL.	
	Examiner DISLER PAUL	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4, 7-11, 13, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakazawa (US 5,715,317).

RE claim 1, Nakazawa disclose of the spatialization system for at least one sound source creating for each source two spatialized monophonic channels (L, R) designed to be received by a listener, comprising: a filter database comprising a set of head-related transfer functions specific to the listener (col.2 line 5-11; col.4 line 38-56/database with info suitable for particular user), a data presentation processor receiving the information from each source and comprising in particular a module for computing the relative positions of the sources in relation to the listener, a unit for computing said monophonic channels by convolution of each sound source with head-related transfer functions of said database estimated at said source position (fig.1 (11); col.6 line 40-60; fig.13-14; col.11 line 50- col.12 line 15; col.1 line 50-65), wherein said data presentation processor comprises a head-related transfer function selection module

with a variable resolution suited to the relative position of the source in relation to the listener (col.6 line 45-67; col.7 line 48- col.8 line 20/with sensor to determine varied sound source locations).

RE claim 4, the spatialization system as claimed in claim 1, wherein it comprising a sound database including in digital form a monophonic sound signal characteristic of each source to be spatialized, this sound signal being designed to be convoluted with the selected head-related transfer functions (fig.13; col.1 line 50-65).

Re claim 7, Nakazawa disclose of the spatialization system as claimed in claim 1, wherein it comprises an input/output audio conditioning module which retrieves at the output the spatialized monophonic channels to format them before sending them to the listener (fig.1 wt (13,138)).

8. The spatialization system as claimed in claim 7, wherein since live communications have to be spatialized, these communications are formatted by the conditioning module so they can be spatialized by the computation unit (fig.1 (13); col.7 line 10-23).

9. The sound spatialization system as claimed in claim 1, wherein the computation unit comprises a processor interface linked with the data

presentation unit and a computer for generating spatialized monophonic channels (fig.1 wt (11-13)).

11. The spatialization system as claimed in claim 9, wherein the computer is implemented by an EPLD type programmable component (fig.1; col.2 line 22-55; col.6 line 65-col.7 line 7/programming logic to enable).

10. The sound spatialization system as claimed in claim 9, wherein since the system comprises a sound database, the processor interface comprises buffer registers for the transfer functions from the filter database and the sounds from the sound database (fig.1,13).

19. The spatialization system as claimed in claim 10, wherein the computer comprises a dual spatialization module which receives the appropriate transfer functions and performs the convolution with the monophonic signal to be spatialized (fig.13 (302,305); col.1 line 55-65).

13. The spatialization system as claimed in claim 9, wherein the computer comprises a dual spatialization module which receives the appropriate transfer functions and performs the convolution with the monophonic signal to be spatialized (see claim 19 rejection).

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3. Claims 2-3, 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazawa (US 5,715,317).

3. The spatialization system as claimed in claim 1 with the coefficients for the head related transfer function (col.4 line 6-13, col.4 line 44-48), But, Nakazawa fail to disclose of the specific wherein the exact value of the coefficient is approximately 40. But, official notice is taken the concept of having a coefficient being approximately 40 is simply the inventor's preference, thus it would have been obvious for one of the ordinary skill in the art to have modify Nakawaza with the same concept wherein having the exact value of the coefficient is approximately 40 for creating sound spatialization in the virtual environment.

Re claim 2, the spatialization system as claimed in claim 1 with the head related function in the database, and wherein the head-related transfer functions are collected at elevation and azimuth (fig.3-4; col.34-40). But, Nakazawa fail to disclose of the specific wherein such a plurality of dimensions of elevation and azimuth including the optional of 7.degree. intervals in azimuth, from 0 to 360.degree., and at 10.degree. intervals in elevation, from -70.degree. to +90.degree. But, official notice is taken the concept of having head related function collected at such .degree. intervals in azimuth, from 0 to 360.degree., and at 10.degree. intervals in elevation, from -70.degree. to +90.degree. is simply the inventor's preference, thus it

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would have been obvious for one of the ordinary skill in the art to have modify Nakazawa with the specific wherein the optional of 7.degree. intervals in azimuth, from 0 to 360.degree., and at 10.degree. intervals in elevation, from -70.degree. to +90.degree. for purpose of enabling the user to sense phantoms speakers in virtual environment.

Re claim 5, Nakazawa disclose of the sound spatialization system as claimed in claim 4, wherein the data presentation processor comprises a sound selection module linked to the sound database to be spatialized (fig.13; col.1 line 50-60), but, Nakazawa fail to disclose of the having the prioritizing between the concomitant sound sources to be spatialized. But, official notice is taken the concept of having the prioritizing between the concomitant sound sources to be spatialized is well known in the art, thus it would have been obvious for one of the ordinary skill in the art to have modify Nakazawa with the similar concept of having the prioritizing between the concomitant sound sources to be spatialized for optimally computing spatialized sound for the user.

6. The sound spatialization system as claimed in claim 5, wherein the data presentation processor comprises a configuration and programming module to which is linked the sound selection module and in which are stored customization criteria specific to the listener (fig.1; col.6

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line 40-61/with personal head sensor for head related function customized).

4. Claim 15, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazawa (US 5,715,317) and Shennib et al. (US 5,645,074).

15. The spatialization system as claimed in claim 9, wherein the computer comprises simulation, But, Nakazawa fail to disclose of the specific wherein being an atmospheric absorption simulation module. But, Shennib et al. disclose of a system wherein having an atmospheric absorption simulation n module (col.15 line 25-32, 50-60) for purpose of creating signals that are representative of real environment in three dimensional-states. Thus, taking the combined teaching of Nakazawa and Shennib et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Nakazawa with the atmospheric absorption simulation module for purpose of creating signals that are representative of real environment in three dimensional-states.

Re claim 20, has been analyzed and rejected with respect to claim 15.

5. Claim 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazawa (US 5,715,317) and Myers et al. (US 4,817,149).

Re claim 17, the sound spatialization system as claimed in claim 1 via the data presentation processor and the high speed bus connected (fig.1), But, Nakazawa fail to disclose of an integrated modular avionics system. But, Myers did disclose of the sound simulation system wherein an integrated modular avionics system (col.6 line 35-38, col.12 line 60-68) for purpose of enabling a user to control the sound source position and environmental acoustics of the binaural recording signal. Thus, taking the combined teaching of Nakazawa and Myers as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Nakazawa with the the sound simulation system wherein an integrated modular avionics system for purpose of enabling a user to control the sound source position and environmental acoustics of the binaural recording signal.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazawa (US 5,715,317) and Park et al. (US 5,930, 733).

16. The spatialization system as claimed in claim 9, but, Nakazawa fail to disclose of wherein the computer comprises a dynamic range weighting module and a summation module to obtain the weighted sum of

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the channels of each track and provide a single stereophonic signal. But, Park et al. disclose of a system wherein similar concept of having the computer comprises a dynamic range weighting module and a summation module to obtain the weighted sum of the channels of each track and provide a single stereophonic signal (fig.2, 5; col.8 line 5-17; col.12 line 50-65) for purpose of accurately retrieving 3-D sound resembling the original signals. Thus, taking the combined teaching of Nakazawa and Park et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Nakazawa with the dynamic range weighting module and a summation module to obtain the weighted sum of the channels of each track and provide a single stereophonic signal) for purpose of accurately retrieving 3-D sound resembling the original signals.

The combined teaching of Nakazawa and Park et al. as a whole, inherently disclose of the single stereophonic signal being compatible with the output dynamic range (Park, col.1 line 39-43; col.6 line 10-17/reproduced as original).

7. Claims 12, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazawa (US 5,715,317) and Hinde (US 7,190,794).

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12. The spatialization system as claimed in claim 10, But, Nakazawa fail to disclose of the specific wherein the computer comprises a source activation and selection module, performing the mixing function between live communications and the sounds from the sound database. But, Hinde disclose of a system wherein similar concept of wherein the computer comprises a source activation and selection module, performing the mixing function between live communications and the sounds from the sound database (col.7 line 50-col.8 line 20; col.8 line 37-50; col. 14 line 35-45) for the purpose of providing the user with real world experience as by sensory cues for enhancing results. Thus, taking the combined teaching of Nakazawa and Hinde as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Nakazawa with the computer comprises a source activation and selection module, performing the mixing function between live communications and the sounds from the sound database for the purpose of providing the user with real world experience as by sensory cues for enhancing results.

Re claim 18 has been analyzed and rejected with respect to claim 12.

8. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Nakazawa (US 5,715,317).

Re claim 14, Nakazawa disclose of the spatialization system as claimed in claim 9 with the selecting/switching for spatializing of audio

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pairs of weighting filters (cole.4 line 55-col.5 line 10), But, Nakazawa fail to disclose of the specific of wherein the computer comprises a soft switching module implemented by a dual linear weighting ramp. But, official notice is taken the concept of having the specific wherein the switching module implemented by a dual linear weighting ramp is well known in the art, thus it would have been obvious for one of the ordinary skill in the art to have modify Nakazawa with the switching module implemented by a dual linear weighting ramp for optimizing the matching process for implementing the virtual opening ear sensation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2615

/HUYEN D. LE/
Primary Examiner, Art Unit 2615